AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1-58 (Cancelled)

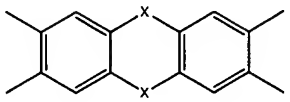
59. (Previously Presented) A microporous material comprising organic macromolecules comprised of first generally planar species connected by rigid linkers predominantly to a maximum of two other said first species, said rigid linkers having a point of contortion such that two adjacent first planar species connected by the linker are held in non-coplanar orientation.

60. (Previously Presented) A microporous material according to claim 59, wherein the point of contortion is a spiro group, a bridged ring moiety or a sterically congested single covalent bond around which there is restricted rotation.

61. (Previously Presented) A microporous material according to claim 59, wherein the point of contortion is provided by a substituted or unsubstituted spiro-indane, bicyclo-octane, biphenyl or binaphthyl moiety.

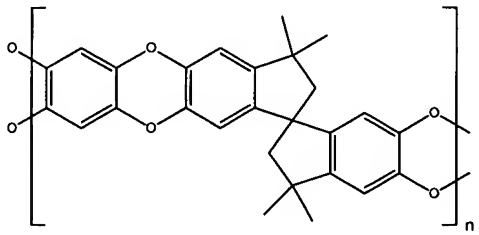
62. (Previously Presented) A microporous material according to claim 59, wherein each of the first planar species comprises at least one aromatic ring.

63. (Previously Presented) A microporous material according to claim 59, wherein each of the first planar species comprises a substituted or unsubstituted moiety of the formula:



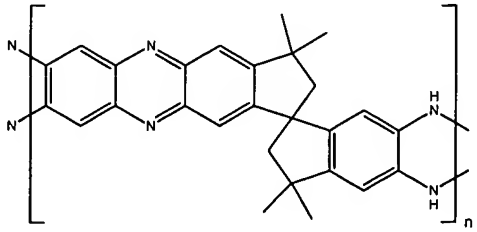
where X is O, S or NH.

64. (Previously Presented) A microporous material according to claim 59, wherein the material comprises repeating units of formula:



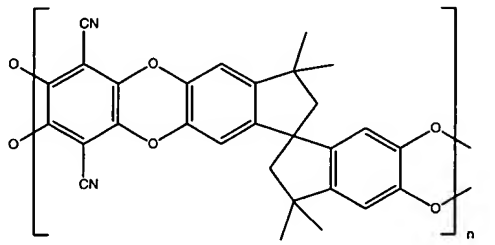
which may be substituted or unsubstituted.

65. (Previously Presented) A microporous material according to claim 59, wherein the material comprises repeating units of formula:



which may be substituted or unsubstituted.

66. (Previously Presented) A microporous material according to claim 59, wherein the material comprises repeating units of formula:



67. (Previously Presented) A microporous material according to claim 64, wherein the organic macromolecules are comprised of at least 70 % by mole of the repeating unit.

68. (Previously Presented) A microporous material according to claim 65, wherein the organic macromolecules are comprised of at least 80 % by mole of the repeating unit.

69. (Previously Presented) A microporous material according to claim 66, wherein the organic macromolecules are comprised of at least 90 % by mole of the repeating unit.

70. (Previously Presented) A microporous material according to claim 59, wherein the material has a surface area of at least 300 $m^2 g^{-1}$.

71. (Previously Presented) A microporous material according to claim 59, wherein the material has an average pore diameter of less than 100 nm.

72. (Previously Presented) A microporous material according to claim 59, wherein the material has a number average mass in the range 1×10^3 to 1000×10^3 amu compared to polystyrene standards.

73. (Previously Presented) A method for producing the microporous material of claim 59 comprising reacting a first monomer unit having a point of contortion with a pair of second generally planar monomer units.

74. (Previously Presented) A membrane comprising a microporous material according to claim 59.

75. (Previously Presented) A membrane according to claim 74, wherein the membrane has a thickness which is less than or equal to 2 mm.

76. (Previously Presented) A membrane according to claim 74, wherein the membrane includes an additional entity selected from a catalyst species, an

organometallic species, an inorganic species, at least one type of metal ion; and at least one type of metal particle.

77. (Previously Presented) A method for producing a free standing membrane in accordance with claim 74, the method comprising the steps of: i) casting a solution of the microporous material of which the membrane is comprised; and ii) evaporating the solvent to produce the membrane.

78. (Previously Presented) A method in accordance with claim 77, wherein the membrane produced is cross-linked using a suitable cross-linking agent.

79. (Previously Presented) A method for separating a first species from a mixture of said first species and a second species, the method comprising the steps of: i) applying the mixture to one side of a membrane in accordance with claim 74; ii) causing the first species to pass through the membrane; and iii) collecting the first species from an opposite side of the membrane.

80. (Previously Presented) A method for enriching a first species in a first mixture of said first species and a second species, the method comprising the steps of: i) applying the first mixture to one side of a membrane in accordance with claim 74; ii) causing the first mixture to pass through the membrane; and iii) collecting a second mixture of the first and second species, which is enriched in respect of the first species compared to the first mixture, from an opposite side of the membrane.

81. (Previously Presented) A catalyst system comprising a catalytic species and a microporous material according to claim 59.

82. (Previously Presented) A tissue support comprising a microporous material according to claim 59.

83. (Previously Presented) A molecular sensor comprising a microporous material according to claim 59.

84. (Previously Presented) An opto-electronic material comprising a microporous material according to claim 59.

85. (Previously Presented) A microporous material comprising organic macromolecules comprised of first generally planar species connected by rigid linkers having a point of contortion such that two adjacent first planar species connected by the linker are held in non-coplanar orientation, subject to the proviso that the first species are other than porphyrinic macrocycles.

86. (New) A method for producing a supported membrane in accordance with claim 74, the method comprising the steps of i) applying a solution of the microporous material of which the membrane is comprised onto a suitable support; and ii) evaporating the solvent to produce the membrane.